AMENDMENT TO THE CLAIMS

The following is a detailed listing of all claims in the Application.

1. (Currently amended) A lamp-control circuit, comprising:

a power factor corrector;

a digitally controlled ballast, comprising power devices and coupled to the power factor corrector, the ballast operable to power a lamp;

a current feedback loop, coupled between at least one of the power devices and the digitally controlled ballast, configured to provide a current feedback signal; and

a voltage feedback loop, coupled between the lamp and the digitally controlled ballast, configured to provide a voltage feedback signal, wherein

the digitally controlled ballast is configured:

to generate a counter signal in accordance with increasing counter values; and

to generate a control voltage, thereby

generating a pulse frequency modulated control signal in response to at least one of the current feedback signal and the voltage feedback signal.

2. (Original) The lamp-control circuit of claim 1, wherein:

the power factor corrector is operable to generate AC input current and voltage essentially in phase with each other.

3. (Original) The lamp-control circuit of claim 1, the digitally controlled ballast comprising:

a controller, coupled to the power factor corrector by a DC link; and

an output stage, comprising the power devices and coupled to the controller.

4. (Original) The lamp-control circuit of claim 3, the controller comprising:

a digital controller, coupled to the power factor corrector by the DC link; and

a power device driver, controlled by the digital controller and configured to drive the output stage.

5. (Original) The lamp-control circuit of claim 4, wherein:

the digital controller and the power device driver are integrated on a chip.

6. (Original) The lamp-control circuit of claim 4, wherein the output stage comprises:

two power devices coupled in series, having an output terminal coupled in between the power devices; wherein

the power devices are selected from the group of power MOS-FETs and power bipolar junction transistors.

7. (Original) The lamp-control circuit of claim 6, wherein:

the current feedback loop comprises a current sensor, coupled to the two power devices, thereby operable to sense the current of at least one power device.

8. (Original) The lamp-control circuit of claim 7, wherein:

the current sensor is one of a current sensing resistor and a current transformer, coupled in series with the two power devices; and

the current feedback loop comprises a resistor-capacitor filter, coupled between the current sensing resistor and the digital controller.

9. (Original) The lamp-control circuit of claim 4, wherein

the voltage feedback loop comprises a voltage sensor, coupled to the lamp, thereby operable to sense the voltage of the lamp.

10. (Original) The lamp-control circuit of claim 9, wherein:

the voltage sensor is a voltage sensing resistor, coupled to the lamp; and

the voltage feedback loop comprises a resistor-capacitor filter, coupled between the voltage sensing resistor and the digital controller.

11. (Original) The lamp-control circuit of claim 4, the digital controller comprising:

a comparator, configured to compare a signal of at least one of the current feedback loop and the voltage feedback loop to a reference voltage.

12. (Original) The lamp-control circuit of claim 1, wherein:

the digitally controlled ballast is configured to receive external commands while in operation.

13. (Original) The lamp-control circuit of claim 1, wherein:

the lamp-control circuit is operable to power a lamp selected from the group of cold cathode lamps, fluorescent lamps, high pressure discharge lamps, metal halide lamps, high intensity discharge lamps, and gaseous lamps.

14. (Original) The lamp-control circuit of claim 1, wherein:

the lamp-control circuit is operable to control more than one lamps, wherein

the lamps are coupled to corresponding voltage feedback loops.

15. (Currently amended) A method of operating a lamp-control circuit, the circuit comprising a digital controller, an output stage, a current feedback loop, and a voltage feedback loop, the method comprising:

receiving one of a current feedback signal and a voltage feedback signal by the digital controller;

generating a digital control signal in response to the received signal by the digital controller, comprising:

generating a counter signal in accordance with increasing counter values; and

generating a control voltage, thereby generating a pulse frequency modulated control signal by the digital controller; and

powering a lamp by the output stage according to the generated digital control signal.

16. (Canceled)

17. (Canceled)

18. (Currently amended) The method of claim ~~17~~15, wherein the generating of a digital control signal comprises:

generating a "High" value for the digital control signal when the counter signal exceeds the control voltage; and

generating a "Low" value for the digital control signal when the control voltage exceeds the counter signal.

19. (Original) The method of claim 18, the output stage comprising a first and a second power device, wherein powering the lamp comprises:

opening the first power device and closing the second power device, when the digital control signal is High; and

closing the first power device and opening a second power device, when the digital control signal is Low.

20. (Currently amended) The method of claim ~~16~~15, wherein generating a pulse width modulated control signal comprises:

generating a counter signal by increasing a voltage level in accordance with increasing counter values; and

generating a control voltage, varying in time.

21. (Currently amended) The method of claim ~~16~~15, wherein powering the lamp comprises:

pre-heating the lamp by powering the lamp at a pre-heating frequency, wherein at the pre-heating frequency the voltage across the lamp is below an ignition voltage.

22. (Original) The method of claim 21, wherein powering the lamp comprises:

igniting the pre-heated lamp by powering the lamp at a lower ignition frequency, wherein at the ignition frequency the voltage across the lamp exceeds an ignition voltage.

23. (Original) The method of claim 15, wherein the method comprises:

sensing a current of the output stage by the current feedback loop;

generating the current feedback signal according to the sensed current;

receiving the current feedback signal by the digital controller; and

controlling the frequency of the digital control signal to control the sensed current into a predetermined range.

24. (Original) The method of claim 15, wherein powering the lamp comprises:

sensing a voltage of the lamp by the voltage feedback loop;

generating the voltage feedback signal according to the sensed voltage;

coupling the voltage feedback signal into the digital controller; and

controlling the frequency of the digital control signal to control the sensed voltage into a predetermined range.

25. (Original) The method of claim 15, the method comprising:

generating the digital control signal to control at least one of a lamp preheating time, a soft-start time, an ignition time, a powering frequency and an ignition frequency.

26. (Original) The method of claim 15, the method comprising:

generating the digital control signal to provide at least one of over-load protection, over-current protection, short protection, and lamp malfunction protection.

27. (Currently amended) The method of claim 15, the method comprising at least one of

receiving external control commands by the digital controller during the operation of the lamp-control circuit; and

sending status signals by the digital controller during the operation of the lamp-control circuit.

28. (Original) The method of claim 27, the receiving the external control commands comprises:

receiving external commands to vary a frequency of the digital control signal to digitally control the brightness of the lamp.